

Appl. No. : 09/771,309
Filed : January 26, 2001

homogenizing an aluminum alloy ingot containing about 0.3 to about 1.5 wt% Mn; and

port hole extruding the ingot to produce a hollow material,

wherein said homogenizing of the ingot is carried out by maintaining the ingot at a first temperature of 500-630°C for more than zero but not more than about 24 hours, cooling the ingot down to a second temperature of about 400-500°C at a cooling velocity of not more than 100°C/hr, and maintaining the ingot at said second temperature for about 4 to 48 hours,

wherein the processing is performed such that a difference in electric conductivity of individual portions in a lengthwise direction of the hollow material is not more than 1.0 IACS%.

3. (Amended) A process for producing an aluminum alloy hollow material, comprising:

homogenizing an aluminum alloy ingot containing about 0.3 to about 1.5 wt% Mn;

wherein said homogenizing of the ingot is carried out by raising the ingot to a temperature (T1) of 500-630°C, maintaining said ingot at said temperature T1 for more than zero but not more than about 16 hours, cooling the ingot from the temperature T1 to 350°C (T2) at a cooling velocity of not more than 100°C/hr, wherein the time between reaching the temperature T1 to reaching the temperature T2 is maintained within 10-48 hrs, and cooling the ingot at an optional cooling velocity from the temperature T2 to room temperature; and

port hole extruding the ingot to produce a hollow material,

wherein the processing is performed such that a difference in electric conductivity of individual portions in a lengthwise direction of the hollow material is not more than 1.0 IACS%.

Appl. No. : 09/771,309
Filed : January 26, 2001

4. (Amended) A process for producing an aluminum alloy hollow material, comprising:

homogenizing an aluminum alloy ingot containing about 0.3 to about 1.5 wt% Mn; and

port hole extruding the ingot to produce a hollow material, wherein said homogenizing of the ingot is carried out by maintaining the ingot at a temperature of about 400-500°C for 12-48 hours, and cooling the ingot down to room temperature,

wherein the processing is performed such that a difference in electric conductivity of individual portions in a lengthwise direction of the hollow material is not more than 1.0 IACS%.

5. (Amended) A process for producing an aluminum alloy hollow material, comprising:

homogenizing an aluminum alloy ingot containing about 0.3 to about 1.5 wt% Mn; and

port hole extruding the ingot to produce a hollow material; wherein said homogenizing of the ingot is carried out by maintaining the ingot at a temperature of 400-500°C for 0.5-4 hours, elevating the temperature up to 550-630°C, maintaining the temperature for 0.5-4 hrs., cooling the ingot to 350°C at a cooling velocity of not more than 100°C/hr, and cooling the ingot from 350°C to room temperature at an optional cooling rate.

7. (Amended) A process for producing an aluminum alloy extruded pipe material for air conditioner piping wherein an aluminum alloy ingot consisting of 0.8-1.5 wt% Mn, 0.1-0.7 wt% Fe, 0.03-0.6 wt% Si, and 1 or at least 2 of 0.00-0.45 wt% Cu, 0.0-0.3 wt% Mg, 0.0-0.3 wt% Cr, 0.0-0.1 wt% Ti, 0.0-0.5 wt% Zn, 0.0-0.3 wt% Zr, and 0.0-0.3 wt% Ni, the balance being aluminum, and any unavoidable impurities, comprising:

homogenizing the aluminum alloy ingot; and

Appl. No. : 09/771,309
Filed : January 26, 2001

port hole extruding the ingot to produce a pipe material,
wherein said homogenizing of the ingot is carried out by maintaining the ingot at a first temperature of 500-630°C for more than zero but not more than about 24 hours, cooling the ingot down to a second temperature of about 400-500°C at a cooling velocity of not more than 100°C/hr, and maintaining the ingot at said second temperature for about 4 to 48 hours,

wherein the processing is performed such that a difference in electric conductivity of individual portions in a lengthwise direction of the pipe material is not more than 1.0 IACS%.

8. (Amended) A process for producing an aluminum alloy extruded pipe material for air conditioner piping wherein an aluminum alloy ingot consisting of 0.8-1.5 wt% Mn, 0.1-0.7 wt% Fe, 0.03-0.6 wt% Si, and 1 or at least 2 of 0.00-0.45 wt% Cu, 0.0-0.3 wt% Mg, 0.0-0.3 wt% Cr, 0.0-0.1 wt% Ti, 0.0-0.5 wt% Zn, 0.0-0.3 wt% Zr, and 0.0-0.3 wt% Ni, the balance being aluminum, and any unavoidable impurities, comprising:

homogenizing the aluminum alloy ingot;

wherein said homogenizing of the ingot is carried out by raising the ingot to a temperature (T1) of 500-630°C, maintaining said ingot at said temperature T1 for more than zero but not more than about 48 hours, cooling the ingot from the temperature T1 to 350°C (T2) at a cooling velocity of not more than 100°C/hr, wherein the time between reaching the temperature T1 to reaching the temperature T2 is maintained within 12-48 hrs, and cooling the ingot at an optional cooling velocity from the temperature T2 to room temperature; and

port hole extruding the ingot to produce a pipe material,

wherein the processing is performed such that a difference in electric conductivity of individual portions in a lengthwise direction of the pipe material is not more than 1.0 IACS%.

Appl. No. : 09/771,309
Filed : January 26, 2001

9. (Amended) A process for producing an aluminum alloy extruded pipe material for air conditioner piping wherein an aluminum alloy ingot consisting of 0.8-1.5 wt% Mn, 0.1-0.7 wt% Fe, 0.03-0.6 wt% Si, and 1 or at least 2 of 0.00-0.45 wt% Cu, 0.0-0.3 wt% Mg, 0.0-0.3 wt% Cr, 0.0-0.1 wt% Ti, 0.0-0.5 wt% Zn, 0.0-0.3 wt% Zr, and 0.0-0.3 wt% Ni, the balance being aluminum, and any unavoidable impurities, comprising:

homogenizing the aluminum alloy ingot; and

port hole extruding the ingot to produce a pipe material,

wherein said homogenizing of the ingot is carried out by maintaining the ingot at a temperature of about 400-500°C for 12-48 hours, and thereafter cooling the ingot down to room temperature,

wherein the processing is performed such that a difference in electric conductivity of individual portions in a lengthwise direction of the pipe material is not more than 1.0 IACS%.

10. (Amended) A process for producing an aluminum alloy extruded pipe material for air conditioner piping wherein an aluminum alloy ingot consisting of 0.8-1.5 wt% Mn, 0.1-0.7 wt% Fe, 0.03-0.6 wt% Si, and 1 or at least 2 of 0.00-0.45 wt% Cu, 0.0-0.3 wt% Mg, 0.0-0.3 wt% Cr, 0.0-0.1 wt% Ti, 0.0-0.5 wt% Zn, 0.0-0.3 wt% Zr, and 0.0-0.3 wt% Ni, the balance being aluminum, and any unavoidable impurities, comprising:

homogenizing the aluminum alloy ingot; and

port hole extruding the ingot to produce a pipe material;

wherein said homogenizing of the ingot is carried out by maintaining the ingot at a temperature of 400-500°C for 0.5-4 hours, elevating the temperature up to 550-630°C, maintaining the temperature for 0.5-4 hrs., cooling the ingot to 350°C at a cooling velocity of not more than 100°C/hr, and cooling the ingot from 350°C to room temperature at an optional cooling velocity.

Please add the following new claims:

Appl. No. : 09/771,309
Filed : January 26, 2001

11. (New) A process for producing an aluminum alloy hollow material as claimed in Claim 2, further comprising drawing-elongating following said port hole extruding.

12. (New) A process for producing an aluminum alloy hollow material as claimed in Claim 3, further comprising drawing-elongating following said port hole extruding.

13. (New) A process for producing an aluminum alloy hollow material as claimed in Claim 4, further comprising drawing-elongating following said port hole extruding.

14. (New) A process for producing an aluminum alloy hollow material as claimed in Claim 5, further comprising drawing-elongating following said port hole extruding.

15. (New) A process for producing an aluminum alloy hollow material as claimed in Claim 7, wherein the processing is performed such that an electric conductivity of the pipe material is at least 39.0 IACS%.

16. (New) A process for producing an aluminum alloy hollow material as claimed in Claim 8, wherein the processing is performed such that an electric conductivity of the pipe material is at least 39.0 IACS%.

17. (New) A process for producing an aluminum alloy hollow material as claimed in Claim 9, wherein the processing is performed such that an electric conductivity of the pipe material is at least 39.0 IACS%.

18. (New) A process for producing an aluminum alloy hollow material as claimed in Claim 10, wherein the processing is performed such that an electric conductivity of the pipe material is at least 39.0 IACS%.

19. (New) A process for producing an aluminum alloy hollow material comprising:

Appl. No. : 09/771,309
Filed : January 26, 2001

homogenizing an aluminum alloy ingot containing about 0.3 to about 1.5 wt% Mn; and

port hole extruding the ingot to produce a hollow material,

wherein said homogenizing of the ingot is carried out by maintaining the ingot at a temperature of about 400-460°C for 12-48 hours, and thereafter cooling the ingot down to room temperature,

wherein the processing is performed such that a difference in electric conductivity of individual portions in a lengthwise direction of the hollow material is not more than 1.0 IACS%.

20. (New) A process for producing an aluminum alloy extruded pipe material for air conditioner piping wherein an aluminum alloy ingot consisting of 0.8-1.5 wt% Mn, 0.1-0.7 wt% Fe, 0.03-0.6 wt% Si, and 1 or at least 2 of 0.00-0.45 wt% Cu, 0.0-0.3 wt% Mg, 0.0-0.3 wt% Cr, 0.0-0.1 wt% Ti, 0.0-0.5 wt% Zn, 0.0-0.3 wt% Zr, and 0.0-0.3 wt% Ni, the balance being aluminum, and any unavoidable impurities, comprising:

homogenizing the aluminum alloy ingot; and

port hole extruding the ingot to produce a pipe material,

wherein said homogenizing of the ingot is carried out by maintaining the ingot at a temperature of about 400-460°C for 12-48 hours, and cooling the ingot down to room temperature,

wherein the processing is performed such that a difference in electric conductivity of individual portions in a lengthwise direction of the pipe material is not more than 1.0 IACS%.

21. (New) The process of Claim 5, wherein the processing is performed such that a difference in electric conductivity of individual portions in a lengthwise direction of the pipe material is not more than 1.0 IACS%.

3